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Fluoride Action Network

Sinkholes and Stacks; Neighbors claim Florida's Phosphate Mines are a Hazard

➤Home
➤Latest News
➤News by Country
➤Regional Contacts
➤Fluoridation:
➧Astounding Facts
➧Chemicals Used
➧History
➧Important Statements
➧Links
➧Overviews
➧The Proponents
➧Reports
➤Fluoride in Industry:
➧Air Pollution
➧Nuclear Production
➧Pesticides
➧Pharmaceuticals
➧Plastics
➤Videos on Fluoride
➤Citizen Tool Kit
➤Abstracts
➤Search

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Sinkholes and stacks; Neighbors claim Florida's phosphate mines are a hazard

By Michael Satchell

Betty Stancil remembers the day in 1986 when a giant dragline began ripping up the ground across the street, just 60 feet from her front door. Eight stories tall, blocking out the sun and swinging a bucket as big as her three-bedroom bungalow, the machine gouged up to 150 tons of earth with each pass. Day and night, the dragline rumbled, the houses shook and white phosphate dust smothered everything on the east side -- the poor folks' side -- of Bradley Junction, a hamlet in central Florida. The mining operation left behind a gullied wasteland of bare earth, rock and stagnant water. That was just the beginning.

For the next two years, as the fertilizer company IMC-Agrico strip-mined 2.7 million tons of phosphate ore, there was noise and dust and an awful smell. Snakes sought refuge in gardens. Clouds of mosquitoes bred in stagnant pools. Residents said their drinking water turned foul. Tests later confirmed that some 200 backyard wells were contaminated by human waste and other pollutants. People began complaining of headaches, diarrhea, body sores and other ailments. Stancil says her house developed cracks inside and out, and next door, the home of 77-year-old Audrey Dixon shifted on its foundations. And still it wasn't over. Gestures. Today, Stancil, Dixon and other residents are asking IMC-Agrico to pay to repair their houses. But the company, with 4,320 employees and a $ 164 million annual payroll, disclaims any responsibility for the damage and refuses to pay. IMC-Agrico says it spent $ 1 million for water testing and new wells as a neighborly gesture but denies that its mining caused the water pollution and subsidence problems. "Their wells were already contaminated. These people are opportunists trying to get something for nothing," says Vice President Lee

Thurner. But why did the company conduct strip-mining operations next to a residential neighborhood? "Because we were allowed to," he replies.

Phosphate mining is an industry little known outside of Florida, where 75 percent of the nation's phosphate is produced. The mineral, used to make chemical fertilizers, is also mined in Idaho, Louisiana, Mississippi, North Carolina, Texas and Wyoming. Unlike surface coal mining that has blighted much of Appalachia, the eight phosphate companies in Florida generally have a good record of reclaiming their strip-mined lands. Indeed, the area around Bradley Junction today looks to be healing nicely, and IMC-Agrico, the biggest of the mining companies, has won several environmental awards for its reclamation projects.

But a series of catastrophic incidents involving several companies is raising doubts about the phosphate industry's environmentally benign image. Last June, a 15-story-deep sinkhole opened up in an 80 million-ton pile of phosphogypsum waste -- known as a gypsum stack -- at IMC-Agrico's New Wales plant. The hole could be as big as 2 million cubic feet, enough to swallow 400 railroad boxcars. Local wags call it Disney World's newest attraction -- "Journey to the Center of the Earth" -- but there's nothing amusing about it. The cave-in dumped 4 million to 6 million cubic feet of toxic and radioactive gypsum and waste water into the Floridan aquifer, which provides 90 percent of the state's drinking water. The company has voluntarily spent $ 6.8 million to plug the sinkhole and control the spread of contaminants in the ground water.

Since 1990, at least six dams or berms in Florida have failed -- three of them since October 1994. They impound giant clay settlement ponds as well as storage areas for fertilizer-plant waste water that is laced with heavy metals. Billions of gallons of effluent have inundated nearby land, polluting streams and killing fish and other aquatic life. The biggest spill occurred on October 2, when an IMC-Agrico dam burst and released 1.8 billion gallons. On November 19, another of the company's dams failed -- this one only four months old and engineered to higher standards. A 482 million-gallon torrent rolled across Hillsborough County, and two people driving separate vehicles were swept away and nearly drowned.

"Slime" ponds. Florida's phosphate belt is concentrated in four fast-growing rural counties east of Tampa, and the sheer magnitude of the operations is staggering. Some 170,000 acres have already been mined, and phosphate companies own or control an additional 526,000 -- an area two thirds the size of Rhode Island. Settlement or "slime" ponds, as they are known locally, cover more than 100,000 acres. Flat-topped gypsum stacks rise up to 200 feet above the landscape, resembling the mesas of the Southwest. The larger stacks contain up to 80 million tons, about 12 times the mass of the Great Pyramid at Giza. In all, there are 20 gypsum stacks in Florida, containing a total of more than 600 million tons. By the year 2000, the volume of waste is expected to reach 1 billion tons.

Waste water from fertilizer plants and these mountains of gypsum are Florida environmentalists' main long-term concern. While gypsum is relatively harmless (it is often used as a soil conditioner), it is pumped from the fertilizer plants into the stacks in a slurry of waste water that is as acidic as gastric fluid or lemon juice. The effluent contains varying concentrations of 17 heavy metals or other toxic substances, including lead, arsenic, chromium, mercury and cadmium.

It also contains low levels of radioactivity. Uranium released from the phosphate ore breaks down to produce radium, which contaminates ground water, and radon gas, another carcinogen that is found in high concentrations in the soil of reclaimed mining areas. Tests have found ground-water contamination violating Florida water quality standards at all 11 fertilizer plants and beneath 12 of the 20 gypsum stacks. On December 21, IMC-Agrico agreed to pay $ 1.1 million to settle a lawsuit filed by the federal Environmental Protection Agency charging the company with violating water pollution limits at nine locations.

Some epidemiological studies suggest that lung cancer rates among nonsmoking men in the phosphate region are up to twice as high as the state average. Acute leukemia rates among adults are also double the average. An industry-sponsored study of male phosphate workers, however, found lung cancer rates no higher than the state average.

There is no proof that mine wastes cause cancer, but the evidence is worrisome. Gary Lyman, professor of medicine, epidemiology and biostatistics at the University of South Florida and author of several studies, fears there may be long-term health threats from ground water and air polluted by waste-water ponds and gypsum stacks and from high levels of radon gas in homes built on reclaimed land.

Near Progress Village south of Tampa, a new gypsum stack is rising a few hundred yards from a grade school. "The problem with radiation and environmental contaminants is latency," says Lyman. "It could be 10 or 20 years before these kids start getting their cancers, and it's going to be hard to link them to the stacks." The EPA has declared Florida's 600 million tons of gypsum waste a serious environmental threat, noting in an April draft report: "The ongoing transfer of phosphorus into surface ecosystems constitutes a real and major risk to the long-term health of ecosystems." The agency is weighing whether to classify the gypsum stacks as hazardous waste under federal statutes, which would force the industry to provide strict safeguards.

Topography. Phosphate mining raises other environmental concerns, too. Reclaimed areas appear to suffer little permanent damage. But Ken Huntington of the Florida Department of Environmental Protection (DEP) says appearances are deceptive. While grassy wetlands can be restored, he argues, some phosphate companies have done a poor job of restoring forested wetlands. Strip mining also changes the topography, interfering with natural water flows. Wetlands adjacent to upland phosphate areas and dependent upon seepage from them are slowly drying up. Mining is also blamed by the state for slowing the natural recharge rate of the Floridan aquifer.

Huntington and his colleagues have tried unsuccessfully to protect the mostsensitive wetlands. "We recommend that permits be denied, but we constantly get overruled in Tallahassee," says DEP environmental specialist Allen Shuey. "I've complained bitterly, but it doesn't change."

Florida's lack of strict regulatory oversight of phosphate mining reflects the industry's economic and political clout. Mining firms have paid $ 1 billion in state

severance taxes since 1971 and provide some 8,000 jobs. The industry also contributes to candidates for state and local offices: Last year's total was $ 160,000.

With a single exception, the phosphate companies have largely escaped the critical scrutiny of national and state environmental groups, which they also support. In 1994, the industry contributed $ 109,000 to some 25 green groups. Since 1988, the Florida Audubon Society has received $ 42,500 from IMC-Agrico alone, but President Bernard Yokel denies that the organization has been compromised. "We are much more successful working with industry than lying in wait to ambush them," he says.

Since 1975, when phosphate miners were required to reclaim strip-mined land, the only major state or federal regulation imposed on the industry has been a 1993 Florida requirement that new gypsum stacks be built atop a plastic liner, to prevent toxic wastes from leaching into the ground water, and that caps be installed to prevent possible air pollution. The new regulation was enacted after years of lobbying by ManaSota 88, a small, regional environmental group that refuses to accept mining contributions. But liners and caps are only a short-term solution. Asks Gloria Rains, the group's chair: "What's going to happen in 30 years when the companies mine out the phosphate and walk away?"

Phosphate mining and processing

Seventy-five percent of the nation's phosphate is mined in Central Florida. An essential plant nutrient, phosphate is used to make agricultural fertilizers used across the U.S. and abroad. Phosphate mining presents special environmental problems.

1 Draglines strip off topsoil then excavate 25-foot layer of ore.

2 Ore deposited in well is blasted by high pressure water guns.

3 The liquified slurry is pumped to a washer plant.

4 Clay is separated and pumped into settlement pond.

5 Sand is separated and pumped back to mined area for reclamation

6 Phosphate rock is shipped to fertilizer plant, and combined with sulphuric acid, converting it to fertilizer form. Each pound produces five pounds of gypsum waste.

To learn more about the phosphate industry, see
www.fluoridealert.org/phosphate/overview.htm